REMARKS

By this amendment, the drawings and claims 1, 2, 5, 6, 7, and 17 have been amended and claims 4 and 16 are canceled to place this application in condition for allowance. Currently, claims 1-3, 5-7, 15, and 17 are before the Examiner for consideration on their merits.

First, Applicants acknowledge the restriction requirement and the withdrawal of claims 21 and 22 from consideration. However, it is requested that if claims 1 and 5 are determined to be patentable over the prior art, the restriction requirement should be withdrawn since claims 21 and 22 include the limitations of claims 1 and 5, respectively.

In response to the Examiner's rejection under 35 U.S.C. § 112, second paragraph, claims 1, 2, 5, and 15 have been extensively amended. In review, claims 1 and 5 have been rewritten to clarify the steps of the invention. Each of these claims now recites the initial steps of calculating the total amount of acid solution and providing a predetermined distribution ratio, which is now selected based on traveling speed and pickling pattern.

It should be noted that claims 1 and 5 characterize the distribution ratio as a predetermined one that is selected based on traveling speed and pickling pattern, not one that is calculated. However, the issue raised by the Examiner as to whether calculating is described is addressed below.

Support for characterizing the distribution ratio as being predetermined can be found in the specification, e.g., page 14, lines 1-3, wherein the "set" value of the

distribution ratio is discussed in relationship to the errors that may occur therein, and the need for matching the controlled value with the actual value. Support for this amendment can also be gleaned from Figure 5 and its description.

It is submitted that the changes to claims 1 and 5 address each of the concerns raised by the Examiner in the Office Action. For the Examiner's benefit, these concerns are addressed below by the Examiner's objection as follows:

a) It is unclear what the value is for the distribution ratio

Claims 1 and 5 now define that the distribution ratio is predetermined, and this value is selected using the traveling speed and pickling pattern. First though, the Examiner's attention is directed to page 17, lines 13-15 wherein a clear definition of "distribution ratio" is given. With this foundation in the specification, it is contended that there is no indefiniteness regarding the use of this term in the claims. One of skill in the art would clearly understand its meaning when reading the specification. The claims, as amended, also make it clear as to the meaning of the distribution ratio, and there can be no indefiniteness in light of the claim amendments.

b) It is not clear how the acid solution in the two tanks is controlled.

The claims now make it clear that the total amount of acid is determined and the distribution ratio is selected, and then the requisite amount of acid is supplied to the first and second tanks using the total acid amount and distribution ratio. The language is absolutely clear in its meaning of

control of the acid solution to the first and second tanks and there can be no issues of indefiniteness in this regard.

c) The claims fail to teach a calculating step.

Each of claims 1 and 5 now recite a calculation step for the total amount of acid, and a determining step for deciding how much acid solution goes into each of the first and second tanks.

d). It is unclear how the distribution ratio is calculated.

As mentioned above, the claims now define the distribution ratio as a set value that is selected not calculated. Therefore, the can be no indefiniteness issue since "determining" or "calculating" is not found in the claims. The use of "selecting" is supported by the specification that says that these values can be drawn from a predetermined list, see page 20, lines 10-15. The specification clearly describes the distribution ratio as just that, a selected ratio that means that so much of the total amount of the acid goes into the tank 11c and the remainder goes into tank 11d, or vice versa. Referring again to the example given on page 20, lines 10-15, the distribution ratios are established for three different traveling speeds and three different pickling patterns, for a total of 9 ratios. A particular and predetermined distribution ratio would be selected based on a particular pickling pattern and traveling speed for use in the control method.

Furthermore, this description of the use of the distribution ratio makes it clear that there is no confusion with the other variables of traveling speed, strip width, scale thickness, etc.

The issue the Examiner is appearing to raise is not the meaning of distribution ratio, but rather how it is determined or calculated, and this issue relates to enablement or written description, not indefiniteness. In this regard, the Examiner's attention is directed to page 15, lines 19+ and Figure 4. From this disclosure, it is apparent that the distribution ratio is determined based on a weight loss of material for the two tanks in questions. Therefore, there is no question that the specification adequately teaches one of skill in the art how to determine or calculate the distribution ratio. As noted above, the table discussed on page 20 would provide a number of different ratios based on pickling patterns and traveling speeds, and one of these ratios would be selected for control of the acid supply to the two tanks whose acid supply is being controlled.

e) There is no table provided of distribution ratios.

The lack of a table of distribution ratios is not fatal to the application. The specification makes it absolutely clear that the distribution ratio is selected when determining the amount of acid to be used in each of the two tanks, and one of skill in the art would readily understand this aspect of the invention without the need for a specific table of ratio values. The specification makes it clear that the ratios range between 0 and 1 since it

is merely the proportion of acid solution for one tank as compared to the acid solution of both tanks.

f) Claims 2 and 15 are amended to make it clear that the selected distribution ratio is derived from a number of ratios. The specification on page 20 makes this clear, and no issues of indefiniteness are raised by these claims, as amended.

g) Claim 5 has been amended to more clearly define the feedback control of the invention. It is believed that the changes to claim 5 overcome any instances of indefiniteness that may have existed in claim 5 prior to this response.

h) Claim 15 is not believed to be indefinite since it refers to the scale thickness which is used to calculate the total amount of acid solution as recited in claim 5.

Based on the arguments above, it is respectfully submitted that all pending claims are fully definite under the purview of 35 U.S.C. § 112, second paragraph, and the rejection based on this statutory provision should be withdrawn.

Turning now to the prior art rejection, the Examiner maintains the rejection of all but claims 5 and 15 based on Mabuchi. The grounds for rejection are:

1) the concentration of acid is calculated, and

2) a concentration distribution of the acid is calculated.

Claims 5 and 15 stand rejected under 35 U.S.C. § 103(a) based on the combination of Mabuchi and Kawasaki. This rejection is based on the position that it

would be obvious to adjust the scale thickness in the method of Mabuchi given the teachings of Kawasaki.

Applicants respectfully traverse the rejections under both 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a).

In review, claims 1 and 5 recite the steps of calculating the total amount of acid solution for first and second tanks, providing a predetermined distribution ratio, and supplying acid solution to the first and second tanks based on the calculated total amount of acid and distribution ratio.

It is respectfully contended that Mabuchi does not teach each and every step of claims 1 and 5, and cannot anticipate these claims.

The Examiner is basing the anticipation rejection on the fact that Mabuchi determines the concentration of the acid of each tank. Referring to Figures 7 and 8 of Mabuchi and Example 2 beginning on col. 10, line 51, three things are shown. Figure 7 shows the temperature distribution of the four tanks, illustrating that the temperature increases and then levels off.

Figure 8 shows the concentration of the acid and iron in each tank. In this figure, it can be readily seen that as the acid concentration decreases from tank 4 to tank 1, iron concentration increases. This showing is consistent with Mabuchi's explanation of the prior art in col. 1, lines 11-35. That is, the pickling solution acid concentration is decreased to 3-5% at the discharge end of the apparatus, whereas iron concentration increases from the upstream or discharge end to the downstream or acid solution entry end.

Mabuchi calculates the acid concentration as described in col. 10, line 51 to col. 11, line 8, and compares this calculated acid concentration to the slanted lines of Figure 8 which represent actual operating conditions. Mabuchi concludes that since the calculated values match closely to the actual acid concentration values across the tanks, the algorithm "acts in the proper manner". What this disclosure teaches is that Mabuchi can calculate a concentration for each tank of the pickling apparatus. However, the ability to merely calculate the concentration, and implicitly know or be able to know a ratio between first and second tanks is not the same as the claimed method that **uses** a distribution ratio to control the supply of acid to at least two tanks of a pickling apparatus. Even if one were to conclude that Mabuchi may know the ratio of acid concentration between two tanks, there is absolutely no suggestion or teaching in Mabuchi to employ this knowledge to improve the pickling operation.

In fact, Mabuchi does not even control the amount of acid to first and second tanks as claimed. Rather, Mabuchi provides a unitary supply of acid concentration that passes through sensor 9. There is no separate supply of acid to any of the tanks of Mabuchi, much less a mechanism to determine how much acid should go to one tank and how much acid should go to another tank.

At most, Mabuchi controls either the acid flow rate or acid concentration using controller 13, see col. 9, lines 50-60, but this change is only reflected in the stream of acid entering the last tank. There is absolutely no teaching or suggestion of implementing a control scheme whereby the acid being supplied to one tank is varied with respect to another tank.

The Examiner makes a number of other points on page 7 of the rejection and they are addressed below:

i) Mabuchi teaches the amount of HCL in each tank, and that it would be within the skill of the art to calculate the total amount of acid based on this.

Applicants do not allege to be the first to calculate the total amount of acid needed for a pickling operation. The discussion of JP P2000-297390A (Japan) on page 4 of the specification indicates that this prior art "calculates a predicted value of acid consumption during pickling of the pickling solution in at least two pickling tanks." Neither are Applicants claiming a method which is just the calculation of the total amount of acid. Therefore, this disclosure of Mabuchi alone does not serve as a basis to reject claims 1 or 5.

ii) The teaching in col. 7, lines 30-35 regarding a distribution of acid in each tank is no different than the claimed distribution ratio.

Applicants strenuously contend that the teaching of Mabuchi in this regard does not teach the steps of claims 1 or 5, and this failure negates the anticipation rejection. Furthermore, this disclosure is insufficient to establish obviousness.

Even, *assuming arguendo,* that the calculation of the concentrations of acid amongst the tanks as shown in Figure 8 can be considered to be a "distribution ratio", Mabuchi makes absolutely no use of the differences between the concentrations in control of his process.

In contrast, Applicants are claiming the novel and unobvious use of the distribution ratio in combination with the calculated total amount of acid to determine how the acid

should be proportioned between at least two tanks in a pickling apparatus. This concept of control is nowhere to be found within the four corners of Mabuchi or the admitted prior art of Japan. Consequently, neither of these references anticipates claims 1 and 5.

It is also contended that there is no reason to modify Mabuchi and arrive at the invention without resort to hindsight. Therefore, there is no basis to allege that Mabuchi establishes a *prima facie* case of obviousness under 35 U.S.C. § 103(a).

As previously argued, Kawasaki does not supply the deficiencies in Mabuchi, and even if properly combined therewith, claims 1 and 5 are still not taught.

The control of the pickling process using the distribution ratio provides benefits not recognized by Japan or Mabuchi. As outlined in the specification, see page 5, lines 18-25, the invention allows for improved productivity and the use of apparatus without the need for extensive alterations. See also, page 19, lines 8-10 and 16-17. This improved productivity is also detailed in the specification with regard to the Examples on pages 20 and 21, wherein improvement in variation of target and actual acid values is obtained.

In light of the arguments made above, it is contended that neither a *prima facie* case of anticipation nor obviousness has been established against claims 1 and 5 based on Mabuchi or Mabuchi when combined with Kawasaki.

While this amendment is being submitted after final rejection, the same issues as previously addressed regarding the distribution ratio and supply of acid to two tanks based on this ratio are before the Examiner in this response. Similarly, the extensive negotiations that occurred between Applicants' attorney and Examiner Carrillo to revise

the claims to overcome the rejection made in the first Office Action dealt with the same issues. Thus, the rewriting of the claims does not present any new issues that would require further search and/or consideration to preclude entry of this Amendment. Lastly, it is also contended that since this Amendment clearly places this application in condition for allowance, it is respectfully requested that this paper be entered and the application be allowed, rather than require Applicants to file an RCE and receive a Notice of Allowance in response thereto.

Lastly, it is submitted that the restriction requirement should be withdrawn as made against claims 21 and 22, since these claims incorporate the limitations of claims 1 and 5, respectively, and each of these independent claims has been demonstrated above to be patentable over the prior art of record.

In summary, it is respectfully contended that Mabuchi cannot establish a *prima facie* case of anticipation against claims 1-3, 5-7, 15, and 17. In addition, Mabuchi, with or without Kawasaki, fails to establish a *prima facie* case of obviousness against claims 5 and 15 since Mabuchi cannot establish anticipation or obviousness. Since claims 1 and 5 are patentable over the applied prior art, their respective dependent claims 2, 3, 6, 7 and 15 are also in condition for allowance.

Accordingly, the Examiner is respectfully requested to examine this application in light of this amendment and promptly pass all pending claims onto issuance.

If the Examiner believes that another interview with Applicants' attorney would be helpful in expediting prosecution of this application, the Examiner is requested to telephone the undersigned at 202-835-1753.

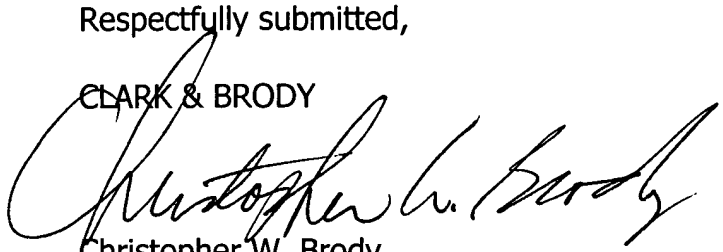
The above constitutes a complete response to all issues raised in the Office Action dated February 22, 2004.

Again, reconsideration and allowance of this application is respectfully requested.

Please charge any fee deficiency or credit any overpayment to Deposit Account No. 50-1088.

Respectfully submitted,

CLARK & BRODY



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